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MERCHANT & GOULD PC
P.O. BOX 2903
MINNEAPOLIS, MN 55402-0903

EXAMINER	
KIM, HEE-YONG	

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2621	

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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)	
	10/551,498	FINN ET AL.	
	Examiner	Art Unit	
	HEE-YONG KIM	2621	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE *3* MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *30 September 2005*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-26* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-14 and 16-26* is/are rejected.

7)☒ Claim(s) *15* is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *30 September 2005* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☒ All b)☐ Some * c)☐ None of:

1.☒ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date *12/9/2005 and 3/12/2008*.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

Claim Objections

1. **Claim 15** is objected because it is dependent on the rejected claim 14.

Claim Rejections - 35 USC § 112

2. The following is a quotation of the second paragraph of 35 U.S.C. 112:

> The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

3. **Claim 13** is rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

4. Regarding **claim 13,** it recites "wherein the optical axes of the light sources and sensors intersect approximately 50mm below the measurement rig". However, it is not clear whether distance between sources and sensors is 50 mm, or distance between the measurement rig and (light and sensors) is 50 mm.

Claim Rejections - 35 USC § 102

5. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

6. **Claims 1-7, 14, 16-17, and 19-24** are rejected under 35 U.S.C. 102(b) as being anticipated by Bridges (US 3,835,332).

Regarding **claim 1**, Bridges discloses Inspection Apparatus for Detecting Defects In a Web. Specifically Bridges discloses Apparatus for measuring uniformity of a laminar material (Fig.1 web inspection apparatus) as the material is delivered (coated web moves past inspection station, col.4, line 24-25) from a laminar material delivery machine (inherent in Bridges), the apparatus comprising:

a measurement rig (light source and photosensors, Fig.1) arranged across the width of the laminar material (see Fig.1), the measurement rig carrying:

a linear array of light sources (light source L1, L2, ..,Fig.1) arranged to direct light onto the laminar material; and

a linear array of optical sensors (Photosensors D1,D2,.., Fig.1), each optical sensor being paired with a light source (photosensors aligned with light sources, col.4, line 24-27) and being configured to receive light reflected by the laminar material (reflected from the coated web, col.3, line 39-46) from at least the light source (light energy that they receive from LED's (light source), col.5, line 1-2) with which it is paired and to thereafter produce a signal indicative of the amount of reflected light it receives (converting the intensity of light reflected from the coated web into signal, col.3, line 38-47); and

a processor (test unit 6 at Fig.1) for receiving signals (A/D conversion, Fig.4) from each of the optical sensors and processing each of the signals (Fig.4) to produce measures of uniformity (uniformity of web density, col.1, line 36-37) of the linear material for each optical sensor, whereby said apparatus produces measures of uniformity related to spaced apart locations (uniformity of web density, col.1, line 36-37) across the width of

the laminar material (Array of Light sources and Detectors are across the width of web, see Fig.1).

Regarding **claim 2**, Bridges discloses everything claimed as applied above (see claim 1). Bridges further discloses wherein each light source and optical sensor pair are arranged with their major optical axes substantially perpendicularly tot he direction of travel of the laminar material (see Fig.1, the optical axis is perpendicular to the direction of the web).

Regarding **claim 3**, Bridges discloses everything claimed as applied above (see claim 2). Bridges further discloses wherein said major optical axes of each light source and optical sensor pair are offset to perpendicular such that they intersect at the web, with the bisector of their optical axes being perpendicular to the web (see Fig.1, the optical axis is perpendicular to the web plane).

Regarding **claim 4**, Bridges discloses everything claimed as applied above (see claim 1). Bridges further discloses wherein said 35 light sources are light emitting diodes (LEDs) (LED's, col.4, line 38).

Regarding **claim 5**, Bridges discloses everything claimed as applied above (see claim 1). Bridges further discloses wherein said processor is configured to obtain a signal indicative of the amount of light received at each optical sensor at predetermined intervals (photosensors output signal generated during the scanning, col.5, line 23-24).

Regarding **claim 6**, Bridges discloses everything claimed as applied above (see claim 5). Bridges further discloses wherein the outputs of the sensors are read sequentially by said processor to thereby produce a raster scan of the textile

web (a sequence of digital codes D_1' through D_n' appear at the output of analog to digital converter during each scan, col.5, line 6-12).

Regarding **claim 7**, Bridges discloses everything claimed as applied above (see claim 4). Bridges further discloses wherein said measurement rig excites said LEDs individually (LED's are sequentially pulsed, col.5, line 6-12) and the signal (a sequence of digital codes D_1' through D_n' appear at the output of analog to digital converter during each scan, col.5, line 6-12) from each optical sensor corresponds to the period (inherent in pulsed LED) during which the optical sensors paired LED is excited (pulsed).

Regarding **claim 14**, Bridges discloses everything claimed as applied above (see claim 1). Bridges further discloses wherein said measurement rig carries a sheet of transparent material (coated web, col.4, line 24) between said linear array of light sources and the laminar material, the transparent material being angled to the plane of the scanner, whereby a portion of the light from the light sources can be reflected to said optical sensors, and processed to produce a calibration measure (calibration mode, col.5, line 16).

Regarding **claim 16**, Bridges discloses everything claimed as applied above (see claim 1). Bridges further discloses wherein said processor is configured to produce a measure of uniformity in the form of a measure of web aerial density (uniformity of web density, col.1, line 36-37) whereby said apparatus is configured to produce measures of uniformity for a laminar material which is a textile web (inspecting a web, col.3, line 19-21).

Regarding **claim 17**, Bridges discloses Inspection Apparatus for Detecting Defects In a Web. Specifically Bridges discloses Apparatus for measuring uniformity of a laminar material (Fig.1 web inspection apparatus) as the material is delivered (coated web moves past inspection station, col.4, line 24-25) from a laminar material delivery machine (inherent in Bridges), the apparatus comprising:

a measurement rig (light source and photosensors, Fig.1) arranged across the width of the laminar material (see Fig.1), the measurement rig carrying:

a linear array of light sources (light source L1, L2, ..,Fig.1) arranged to direct light onto the laminar material; and

a linear array of optical sensors (Photosensors D1,D2,.., Fig.1), each optical sensor being paired with a light source (photosensors aligned with light sources, col.4, line 24-27) and being configured to receive light transmitted through the laminar material (transmitted through the coated web, col.3, line 39-46) from at least the light source (light energy that they receive from LED's (light source), col.5, line 1-2) with which it is paired and to thereafter produce a signal indicative of the amount of transmitted light it receives (a signal proportional to light transmitted through the web, col.6, line 11-14); and

a processor (test unit 6 at Fig.1) for receiving signals (A/D conversion, Fig.4) from each of the optical sensors and processing each of the signals (Fig.4) to produce measures of uniformity (uniformity of web density, col.1, line 36-37) of the linear material for each optical sensor, whereby said apparatus produces measures of uniformity related to spaced apart locations (uniformity of web density, col.1, line 36-37) across the width of

the laminar material (Array of Light sources and Detectors are across the width of web, see Fig.1).

Regarding **claim 19**, Bridges discloses everything claimed as applied above (see claim 17). Bridges further discloses wherein each light source and optical sensor pair are arranged with their major optical axes substantially perpendicularly tot he direction of travel of the laminar material (see Fig.1, the optical axis is perpendicular to the direction of the web).

Regarding **claim 20**, Bridges discloses everything claimed as applied above (see claim 19). Bridges further discloses wherein said major optical axes of each light source and optical sensor pair are offset to perpendicular such that they intersect at the web, with the bisector of their optical axes being perpendicular to the web (see Fig.1, the optical axis is perpendicular to the web plane).

Regarding **claim 21**, Bridges discloses everything claimed as applied above (see claim 17). Bridges further discloses wherein said 35 light sources are light emitting diodes (LEDs) (LED's, col.4, line 38).

Regarding **claim 22**, Bridges discloses everything claimed as applied above (see claim 17). Bridges further discloses wherein said processor is configured to obtain a signal indicative of the amount of light received at each optical sensor at predetermined intervals (photosensors output signal generated during the scanning, col.5, line 23-24).

Regarding **claim 23**, Bridges discloses everything claimed as applied above (see claim 22). Bridges further discloses wherein the outputs of the sensors are read sequentially by said processor to thereby produce a raster scan of the textile

web (a sequence of digital codes D_1' through D_n' appear at the output of analog to digital converter during each scan, col.5, line 6-12).

Regarding **claim 24**, Bridges discloses everything claimed as applied above (see claim 1). Bridges further discloses wherein the LEDs are excited individually (LED's are sequentially pulsed, col.5, line 6-12) and the signal is taken from each optical sensor while its corresponding LED (photosensors aligned with light sources, col.4, line 24-27) is excited (pulsed).

Claim Rejections - 35 USC § 103

7. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

8. **Claims 8, 10, 18,** and **25** are rejected under 35 U.S.C. 103(a) as being unpatentable over Bridges.

Regarding **claim 8**, Bridges discloses everything claimed as applied above (see claim 6). However, Bridges fails to disclose wherein the predetermined interval between scans is chosen so that the distance the web travels between scans matches the separation between adjacent sensors.

Bridges discloses that linear array of photosensors detect light during scan. Therefore, each sensor covers the distance same as the separation between adjacent sensors in one direction during the scan. However, in the other direction (perpendicular

to the former direction) the web advances during scan and sensor has to cover whatever distance it advances. Therefore, there is a motivation to cover the same distance during scan in both directions to equalize the resolutions.

Therefore, given this motivation, it would have been obvious to one of ordinary skill in the art at the time invention was made to modify Bridges by providing wherein the predetermined interval between scans is chosen so that the distance the web travels between scans matches the separation between adjacent sensors, in order to cover the same distance during scan in both direction to equalize the resolutions. The Bridges web inspection apparatus, incorporating wherein the predetermined interval between scans is chosen so that the distance the web travels between scans matches the separation between adjacent sensors, has all the features of claim 8.

Regarding **claim 10**, Bridges discloses everything claimed as applied above (see claim 1). However, Bridges fails to disclose wherein the measurement rig comprises a mounting block within which the light sources and the optical sensors are mounted.

However, the examiner maintains that it was well known in the art to provide wherein the measurement rig comprises a mounting block within which the light sources and the optical sensors are mounted, in order to have evenly distributed light source and detector pairs. The Bridges web inspection apparatus, incorporating mounting block within which the light sources and the optical sensors are mounted, has all the features of claim 10.

Regarding **claim 18**, Bridges discloses everything claimed as applied above (see claim 17). However, Bridges fails to disclose comprising two

arrays of light sources arranged on opposite sides of the laminar material and two arrays of optical sensors also arranged on opposite sides of the material each light source and optical sensor being paired with a light source on the opposite side of the laminar material, whereby said apparatus can produce measures of uniformity based on light transmitted in one or both directions.

However, the examiner maintains that the above feature is just simple extension of the Bridges web inspection apparatus by adding another pair of same arrays of light sources and detectors with the opposite direction. It would have been obvious to one of ordinary skill in the art at the time invention was made to modify Bridges by providing adding another pair of same arrays of light sources and detectors with the opposite direction, in order to enhance accuracy of the measurement.

Regarding **claim 25**, Bridges discloses everything claimed as applied above (see claim 22). However, Bridges fails to disclose wherein the predetermined interval between scans is chosen so that the distance the web travels between scans matches the separation between adjacent sensors.

Bridges discloses that linear array of photosensors detect light during scan. Therefore, each sensor covers the distance same as the separation between adjacent sensors in one direction during the scan. However, in the other direction (perpendicular to the former direction) the web advances during scan and sensor has to cover whatever distance it advances. Therefore, there is a motivation to cover the same distance during scan in both directions to equalize the resolutions.

Therefore, given this motivation, it would have been obvious to one of ordinary skill in the art at the time invention was made to modify Bridges by providing wherein the predetermined interval between scans is chosen so that the distance the web travels between scans matches the separation between adjacent sensors, in order to cover the same distance during scan in both direction to equalize the resolutions. The Bridges web inspection apparatus, incorporating wherein the predetermined interval between scans is chosen so that the distance the web travels between scans matches the separation between adjacent sensors, has all the features of claim 25.

9. **Claims 9 and 26** are rejected under 35 U.S.C. 103(a) as being unpatentable over Bridges in view of Cochran (5,365,084).

Regarding **claim 9**, Bridges discloses everything claimed as applied above (see claim 8). However, Bridges fails to disclose wherein said apparatus comprises a speed sensor for monitoring the speed of the web delivery system and said processor determines the pre-determined interval from the monitored speed.

In the analogous field of endeavor, Cochran discloses Video Inspection System Employing Multiple Spectrum LED Illumination. Specifically Cochran discloses a speed sensor for monitoring the speed of the web delivery system (Speed Sensor 40, Fig.1), in order to synchronize the web velocity with CCD camera detection (col.9, line 53-55).

Therefore, given this teaching, it would have been obvious to one of ordinary skill in the art at the time invention was made to modify Bridges by providing a speed sensor for monitoring the speed of the web delivery system and the Bridges processor

determines the pre-determined interval from the monitored speed, in order to check web travel distance same as predetermined interval during scan (See above claim 8). The Bridges web inspection apparatus, incorporating wherein the predetermined interval between scans is chosen so that the distance the web travels between scans matches the separation between adjacent sensors further incorporating the web speed sensor to check the web velocity conforming the predetermined interval during scan, has all the features of claim 9.

Regarding **claim 26**, Bridges discloses everything claimed as applied above (see claim 25). However, Bridges fails to disclose wherein said apparatus comprises a speed sensor for monitoring the speed of the web delivery system and said processor determines the pre-determined interval from the monitored speed.

In the analogous field of endeavor, Cochran discloses Video Inspection System Employing Multiple Spectrum LED Illumination. Specifically Cochran discloses a speed sensor for monitoring the speed of the web delivery system (Speed Sensor 40, Fig.1), in order to synchronize the web velocity with CCD camera detection (col.9, line 53-55).

Therefore, given this teaching, it would have been obvious to one of ordinary skill in the art at the time invention was made to modify Bridges by providing a speed sensor for monitoring the speed of the web delivery system and the Bridges processor determines the pre-determined interval from the monitored speed, in order to check web travel distance same as predetermined interval during scan (See above claim 8). The Bridges web inspection apparatus, incorporating wherein the predetermined interval between scans is chosen so that the distance the web travels between scans matches

the separation between adjacent sensors further incorporating the web speed sensor to check the web velocity conforming the predetermined interval during scan, has all the features of claim 26.

10. **Claim 11** is rejected under 35 U.S.C. 103(a) as being unpatentable over Bridges in view of Kedar (US 5,665,975).

Regarding **claim 11**, Bridges discloses everything claimed as applied above (see claim 10). However, Bridges fails to disclose wherein the optical sensors are mounted within individual holes and set back from an aperture of their respective hole which faces the laminar material.

In the analogous field of endeavor, Kedar discloses Optical Detector Including An Optical Alignment Block and Method. Specifically Kedar discloses wherein the optical sensors are mounted within individual holes and set back from an aperture of their respective hole (Fig. 10B), in order to securely fastening of optical sensors (col.13, line 15-24).

Therefore, given this teaching, it would have been obvious to one of ordinary skill in the art at the time invention was made to modify Bridges by providing wherein the optical sensors are mounted within individual holes and set back from an aperture of their respective hole which faces the laminar material, in order to securely fastening of optical sensors. The Bridges web inspection apparatus, incorporating mounting block within which the light sources and the optical sensors are mounted, further incorporating

mounting optical sensor within individual holes and set back from an aperture of their respective hole, has all the features of claim 11.

1. **Claim 12** is rejected under 35 U.S.C. 103(a) as being unpatentable over Bridges in view of Wohlrab (US 4,017,178).

Regarding **claim 12**, Bridges discloses everything claimed as applied above (see claim 10). However, Bridges fails to disclose wherein the light sources are mounted within an elongate slot extending the length of the mounting block whereby light sources may provide illumination for optical sensors adjacent to the optical sensor with which they are paired.

In the analogous field of endeavor, Wohlrab discloses Apparatus for Detecting a Malfunction in a Color Connecting Light Valve of a Film Printer. Specifically Wohlrab discloses the light sources mounted within an elongate slot extending the length of the mounting block (col.5, line 47-52), in order to maintain the slides between respective sensors (abstract).

Therefore, given this teaching, it would have been obvious to one of ordinary skill in the art at the time invention was made to modify Bridges by providing wherein the light sources are mounted within an elongate slot extending the length of the mounting block whereby light sources may provide illumination for optical sensors adjacent to the optical sensor with which they are paired, in order to securely maintain the slides between respective sensors. The Bridges web inspection apparatus, incorporating mounting block within which the light sources and the optical sensors are mounted,

further incorporating mounting light source within an elongate slot extending the length of the mounting block, has all the features of claim 12.

Conclusion

11. Any inquiry concerning this communication or earlier communications from the examiner should be directed to HEE-YONG KIM whose telephone number is (571)270-3669. The examiner can normally be reached on Monday-Thursday, 8:00am-5pm EST.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Marsha Banks-Harold can be reached on 571-272-7905. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

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/HEE-YONG KIM/
Examiner, Art Unit 2621

/Andy S. Rao/
Primary Examiner, Art Unit 2621
May 10, 2010